

Thermometers, Barometers, Hygrometers.

These Observations being thought very considerable as well as curious, 'tis hoped, that those who have conveniency, will give encouragement and assistance for the making of them; and withall oblige the publick by imparting, what they shall have observed of this kind: The Publisher intending, that when ever such observations shall be communicated to him, he will give notice of it to the publick, and take care of the improvement thereof to the best use and advantage. A Pattern of the Table, proposed to be made for observing the Tides, is intended to be published the next opportunity, God permitting.

*An Account
Of several Books lately published.*

I. *Johannis Hevelii D E S C R I P T I O C O M E T Æ, Annæ Æra Christianæ M D C I X V . exorti; unâ cum M A N T I S S A Prodromi Cometici, Observations omnes prioris C O M E T Æ M D C L I V , ex iisque genuinum mixtum accurate deductum, cum Notis & A rimadversionibus exhibens.*

This Book (as the Title it self intimates) undertakes two things. First, To give an Account of the *Second* of the two late Comets, which appeared, when the *other* was scarce extinxt; Concerning which, the Author doth, from the Observations made by himself with a *Sextant* of 6 foot, and divided into *minutes* and *seconds*, assign both its true place (as well in respect of the *Equator* as the *Equator*) and its proper motion: Adding a fair Delineation of its Course, together with the genuine Representations of its *Head* and *Train*, in each day of its apparition; and subjoyning a General Description and Discourse of some of the more notable *Phenomena* thereof. It was first seen at *Dantzick* by the Watchmen, the 5th of *April* st. n. 1665, and then observed by the *Author*, from *April* 6. about 1½ of the Clock in the morning, till *April* ac. at 3. in the morning. During which time, it went with a reasonable velocity; making 46 deg. in its *Orb*, according to the *Order of the Signs*, moving from the *Breast* of *Pegasus*, towards the *Head* of *Andromeda*, and the *Left Horn* of *Aries*; having, as 'tis presumed, taken its rise from above *Sagittâ*, and run through the *Breast* of *Antinous*, under *Aquila*, and the *Dolphin*, to the said *Pegasus*; and so on, as is already expressed.

The *Head* of it is in the Book described of a Colour like that of *Jupiter*, all along much brighter than that of the former Comet, though of a somewhat less magnitude; having in its middle onely one round, but very bright and big *Kernel* or *Speck*, resplendent like *Gold*, and encompassed with another more dilute and seemingly uniform matter: its *Tail* being at first, about 17 deg. and afterwards 20. and sometimes 25 deg. long, and divaricated towards the End.

Next, it is observed, that though this Star did afterwards slacken its pace, yet it retained the vividness of its Colour, both of the *Head* and *Train*; the *Head* especially, keeping at the time as well of the last observations, as of the first

first, the brightness of its single kernel, though the environing more dilute matter were then almost all lost ; it being, according to the Author, more and more attenuated, and grown narrow, the nearer the Star approached to the Sun.

Thirdly, 'tis noted, That this Comet did very much digress from the *Hypothesis*, delivered by *M. Auzout*, in regard that, whereas according to that *Hypothesis*, this Star should not arrive to the *Ecliptick* till after the space of 3 months, it arrived there the 28 of *April*. And then, that its first Conjunction with the Sun hapned between the 19 and 20 of *April*, and the second, the last of *April*, not (as *M. Auzout*, would have it) the 15 of *May*. So that he concludes, that this Comet never came down to the *Pleiads* and the *Eye of Taurus*, as the *Hypothesis* of *M. Auzout* requires, but that from *April 20*, it did immediately take its course towards the *Ecliptick*, deflecting every day more and more from the *Section of a Great Circle*, to the *Lucida of Aries*, arriving at the *Ecliptick* the last of *April*, about the 8th or 10th deg. of *Taurus* ; not in *July* about the 8th of *Gemini*, and the *Eye of Taurus*.

Fourthly, He intimates, that if this Comet had appeared some few weeks sooner, it would have confronted the former Comet, being yet in its vigour and of a conspicuous bigness, in the same place, where that was, viz. the *Head of Aries*.

Fifthly, He observes, that this Star in progress of time became *Retrograde*, whence it came to pass, that in the Months of *June* and *July* it did not appear again before the Rising of the Sun, though the Sun left it far behind : whereas, if it had proceeded toward the *Eye of Taurus*, it would have appeared again in the morning.

Sixthly, He maintains, that this Comet was not the same with the former ; which he thinks may be demonstrated, only by a due Delineation of both their Course upon the *Globe* ; where he saith it to be evident, that the former could never come to the *Head of Pegasus*, as moving already in *February* in a streight Course about the *Head of Aries* : Besides, that the former went in the very beginning in a *Retrograde* motion ; but this perpetually in a direct one : that, about the end, very slow, its Head lessning and growing dark ; this swift enough, with its head conspicuous and bright. To which he adds, that the whole Course of the former was made under a quite different *Angle* of the *Orbite* and *Ecliptick*, and a different Motion of the *Nodes* from the latter : As also that their *Faces* differed very much from one another ; the first exhibiting all along a matter, which as to its density and rarity, altered from day to day exceedingly, whereas the second retained (to the Authors admiration, who affirms, never to have observed the like) all the time he saw it, one and the same round, dense and bright Speck or Kernel.

All which he concludes 1, With an Intimation of his sense concerning two other Comets, pretended to have been lately seen, One at *Rome*, about the *Girdle*

Girdle of Andromeda, in the Months of *February* and *March*, 1664. the other in *Germany* in *Capricorne*, about *Saturne* in the head of *Sagittary*, during the Months of *September* and *October*, 1665. 2ly. With an Advertisement of what he has done in that important Work for the Advancement of *Astronomy*, the due *Restitution of the Fixt Stars*, *vid.* That he has almost finish't it, himself alone, without trusting to any other mans labour, that was not directed by him.

The Second Part of this Book (the *Mantissa* to the *Prodromus Cometicus*) endeavours to justifie the Authors Observations touching the former Comet, excepted against by *M. Auxoat*, in several particulars; as 1. That it had not pass'd to the *First*, but *Second Star* in *Aries*, and had mov'd in quite another Line, than He had described. 2. That its *proper motion* about the end of *January* and the beginning of *February*, 1665. had not been rightly assign'd. 3. That the *Bignesse* of its *Diameter* had not been truly delivered; Nor 4. The *Faces* of its *Head* in due manner represented.

To all which the Author endeavors to answer: 1. By delivering all his Observations of that Comet, thereby to shew, what care and diligence he had used, *particularly* to make out, how great its *Diurnal motion* had been, in what proportion, and how far, it decreased, and where and in what degree it increased again: Which being, as he conceives, duly and exactly deduced, and demonstrated, he esteems it afterwards to be easie for every one, versed in these matters, certainly to collect and to judge, what way the Comet, after it became invisible to the naked Eye, and could be no longer observed with *Sextants* and *Quadrants*, had taken, and what Line it had described. 2, By subjecting all those Observations, with great diligence and labour, to a rigid *Calculus*, thereby to obtain, for every day, the *Longitudes*, *Latitudes*, *Right Ascensions*, *Inclinations*, *Proper motion*, *Angle* of the *Ecliptick* and the *Equator*, and the *Nodes* of that Comet; for the construction of an *Ephemerides* of its whole Motion. From all which he pretends to prove, that he has not erred in his Observation of *February 18.* nor been prepossest by any *Hypothesis*, nor deluded by any *Fixt Star*, as *M. Auxoat* thinketh; but that near the *First Star* of *Aries* there then appear'd a *Phænomenon*, most like to that Comet, that was seen some dayes before, if compared with the Observations made thereof *Febr. 12, 13, 14.* Though he will not hitherto positively determine, whether that *Phænomenon*, which appear'd to him *February 18.* was indeed

indeed that very Comet, which he saw with his naked Eye, and observed with his Geometrical Instruments, the said 12, 13, and 14. dayes of *February*; or whether it was another, and whether he had lost that Comet, which moved towards the *Second Star in Aries*: but leaves it to the Learned World, and particularly to the *Royal Society*, after they shall have well examined and considered all his Observations, and the *Calculus* raised therefrom, to judge of this, and the other particulars in controversie.

II. *Isaacus Vossius de N I L I et ALIORUM FLUVIUM ORIGINE.* It was Numb. 14. of these *Transactions*, that gave an account of the *Cause of the Inundation of the Nile*, as it was rendred by Monsieur *de la Chambre*: This is to give you another, not only of the *Inundation*, but also of the *Origine* of that, and of *other Rivers*, as it is delivered by Monsieur *Isaac Vossius*, who undertakes in this Book to shew;

1. That those *Subterraneous Channels*, through which several *Philosophers* teach, that the *Sea* discharges it self into the *Rivers*, are not only *imaginary*, but *useless*, in regard 'tis impossible for the *water* to rise from the *Subterraneous places* up to the *Mountains*, where commonly the *Sources of Rivers* are.

2. He explices, why, if a *Pipe* be put into a *Bason* full of *Water*, the *water* is seen more raised in the *Pipe*, than in the *Bason*, and rises higher according as the *Pipe* is narrower; On the contrary, if the same *Pipe* be put into a *Bason* full of *Quicksilver*, the *Quicksilver* stayes lower in the *Pipe*, than in the *Bason*. The reason, which he renders hereof, is, That as the *Water* sticks easily to all it touches, it is sustain'd by the sides of the narrow *Pipe* wherein it is included: And indeed, if the *Pipe* be quite drawn out of the *Water*, the *Water* doth not all fall out, but so much of it remains, as the sides of the *Pipe* could sustaine: Whence it is, that the *Water* which is kept up by the *Walls* of the *Tube*, weighing no longer upon that which is in the *Bason*, is thrust upwards, and keeps it self raised above its *Levell*; but the *Quicksilver* not adhering so easily, as *Water*, to *Bodies* it touches, is not sustaine by the sides of the *Tube*, and so mounts not above its *Levell*, but rather descends below it, because the *Pipe*, which is *streight*, hinders the endeavor that is in the *Mercury* to rise to its *Level*. He adds, that this *Observation* makes nothing for the *Explication* of the *Origine of Rivers*; because, though it be true, that the *Water* by

by this means rises above its Levell, yet it does never run off at the top of the Pipe. Having said this, he answers to the other Arguments, commonly alledged to maintain this Opinion.

3. He pretends, that all Rivers proceed from a *Colluvies* or *Rendevous* of Rain-waters, and that, as the Water, that falls upon *Hills*, gathers more easily together, than that which falls in *Plaines*, therefore it is, that Rivers ordinarily take their Source from *Hills*. Thence also comes it (saies he) that there are more *Rivers*, than *Torrents*, in the *Temperate Zones*; and, on the contrary, more *Torrents*, than *Rivers*, in the *Torrid Zone*: For, as in hot Climats the Mountains are far higher, the Water, that descends from them with impetuosity, runs away in a little while, and formes such Collections of Water, as soon dry up; but in cold Climats, the Waters do not run away but slowly, and are renew'd and recruited by Rain, before they are quite dried up; because the Hills are there lower, and so the Bed of Rivers hath lesse declivity.

Having thus discoursed of *Rivers in General*, he treats of the *Nile* in particular; and there

1. Observes, That the Order of the Seasons of the Year is quite inverted under the *Torrid Zone*. For, whereas it should be then Summer, when the Sun is near; and Winter, when the Sun is farther off: Under the *Torrid Zone* 'tis never lesse hot, than when the Sun is nearest; nor more hot, than when the Sun is farthest off: So that to the people that live between the *Aquinoctrial* and the *Tropicks*, Summer begins about *Christmass*, and their Winter, about *St. Johns* day. The reason whereof is, (saith he) that when the Sun is directly over their Heads, it raises abundance of vapors, and draws them so high, that they are presently converted into Water by the coldnesse of the Air; whence it comes to passe, that then it rains continually, which does refresh the Air; but when the Sun is farther off, there falls no more rain, and so the Heat becomes insupportable.

2. He proves by many recent Relations, that the *Sources* of the *Nile* are on this side of the *Aquinoctrial* in *Aethiopia*; of which he gives a very accurate *Mappe*, correcting many faults which *Geographers* are wont to commit in the Description of the Kingdom of the *Abyssins*, which they believe to be much greater than indeed it is.

3. This supposed, he easily gives an account, why the *Nile* yearly overflows about the end of *June*: For, as at that time there falls much rain in *Aethiopia*, it must needs be, that the *Nile*, whose source is in that Country, should then overflow, when those rains begin, and subside, when they cease.

There are besides, in this Book, two other *Tracts*, In the first, M. *Vof-
fins* endeavours to maintain the Doctrine, he had deliver'd in his Book *De Lumine*, and to shew, that the *Soul of Animals* is nothing but *Fire*, that there are no invisible Atoms; nor so much as any Pores, even in the Skin of man. Here he treats also of *Refractions*, and alledges the Examples of several persons, who have then seen the Sun by the means of Refraction, when really He was under the *Horizon*.

In the second, He discourses of some points of the *Mechanicks*; and relates among other things, that the *Arrows* and *battering Rams* (*Aries*) of the Antients did as much execution, as our *Muskets* and *Canons*; and then, that the Vehemence of the percussion depends as much upon the Length of the percipient Body, as upon the velocity of the Motion. He adds, that the Length of a Canon ought not to exceed 13 foot, and that a greater length is not only useless, but hinders also the effect of the Gun, not because the Bullet is thrown out of the Gun, before all the powder is fired (as some believe); but because the Bullet is then beaten back into the Gun by the Air, re-entering into it with impetuosity, when the flame is extinct.

III. *LE DISCERNEMENT DU CORPS ET DE L'AME*, par M. *de Cordemoy*.

This French Treatise (but very lately come to the Publisher's hands) examines the different Operations of the Soul and Body, and the Secret of their Union, pretending to discover to every one, what he is, and what is transacting within him. It consists of six Discourses.

1. In the first, the Author examines the Notions, we have in general of *Bodies* and *Matter*; of *Quantity*; of *Qualities*; of *Place*; of *Rest*; of *Motion*; of *Vacuity*; of *Forms*: to shew what is to be understood by these Terms, which cause all the perplexity that is in the ordinary *Physicks*. He begins with taking notice, that hitherto *Philosophers* have had no distinct notions of *Bodies* and *Matter*, from the want whereof he conceives, that almost all the Errors in Common *Physiolog*y have sprung.

prung? To rectify which, he defines *Bodies* to be * *Extended Substances*, and *Matter* an *Aggregate of Bodies*. * It *means hard, To say, An extended substance is* Whence he inferrs, that *Bodies* are *Indivisible* and *Matter divisible*; a *Body* being nothing but *one* and the *same substance*, whose different *extremities* are *inseparable*, because they are the *extremities* of *one* and the *same Extension*, and, in a *word*, of *one* and the *same Substance*: but *Matter* being nothing but an *Association or Collection of Bodies*, 'tis evident, (*said he*) it must be *divisible*. This *doctrine* he so much *insists upon*, that he *conceives*, *Nature* cannot *subsist*, if a *Body* in the *sence* he *takes it*, be *divisible*; and that *Motion* and *Rest* cannot be *explicated* without it. As for *Quantity*, he *makes* that to be nothing but *More* or *Less Bodies*; not allowing, that each *Body* should be a *Quantity*, though it be a *part of Quantity*; no more than an *Unite* is a *Number*, though it *make part of a Number*: so that *Quantity* and *Extension* are two *distinct* *things* with him, the *first* belonging properly to *Matter*, the *last* to a *Body*. Touching *Vacuity*, he *conceives*, that the *Bodies*, which compose a *mass*, are not *every where*, so *near one another*, as not to leave *some interval* in *several places*. Neither does he *think it necessary*, that those *intervals* should be *fill'd up*; nor *unconceivable*, that there should be *no Body* between two *Bodies*, which *touch not one another*. And when 'tis said, that those *intervals* cannot be *conceived* without *Extension*, and that consequently there are *Bodies* that *replenish them*, he *frankly pronounces* that *not to be true*; and *affirms*, that though it may be *said*, that between two *Bodies*, which *touch not one another*, other *Bodies* may be *placed* of *so or so many feet, &c*: yet ought it not to be *inferred*, that therefore they *are there*, but *onely*, that they are *thus placed*, that there *may be put between them so many Bodies, as joyned together would compose an Extension of so many feet*. So that one *conceives onely*, that *Bodies may be placed there, but not that they are there*: and as *we can have an Idea of many Bodies, though none of them be in being*; so *we can conceive, that some Bodies may be put between others, where really there are none*. And when 'tis *alleged*; that if all the *Bodies*, that *fill a vessel full*, were *destroyed*, the *sides of the vessel* would be *closed together*; He *professes*, he *understands not that ratiocination, nor can conceive, what one Body does to the subsistence of another, more than to sustain themselves mutually, when they are thrust by the neighbouring ones*: and therefore *sees not, why the sides of the vessel should close, if nothing did thrust them together*; but *understands clearly, that two Bodies may well subsist so far from one another, that one might place a great many Bodies between them, or none at all, and yet they neither approach to, nor recoil from one another*.

2. In the *Second*, he examines the *Changes*, which he knows in Matter, and makes it his busines to explicate all those that respect *Quantity*, *Qualities* and *Forms*, by *Local Motion*, esteeming their needs no other.

3. In the *third*, he explains the Motion of *Artificial Engines*, and that of *Natural* ones, by one and the same Cause; endeavouring among other things to shew, that the Body of an Animal is moved after the same manner with a Watch. That cause of motion he makes the *Materia Subtilis*; and the finer or subtler that is, the better and fitter he conceives it to be to preserve Motion.

4. In the *Fourth*, he teaches, that though Experience seems to evince, that the Soul moves the Body, and that one Body moves an other; yet there is nothing, but God, that can produce any motion in the World, and all other Agents, which we believe to be the *Cause* of this or that Motion, are no more but the *Occasion* thereof. In doing this, he advances certain *Axioms*, and *Conclusions*, which are in short,

a. The *Axioms*: That no substance has that of it self, which it can loose, without ceasing to be, what it is: That every body may loose of its motion, till it have no more left, without ceasing to be a Body: That we cannot conceive but two sorts of substances, *vid. a Spirit* (or *That which thinketh*) and a *Body*, wherefore they must be considered as the Causes of all, that happens, and what cannot proceed from the one, must necessarily be adscribed to the other: That to *Move*, or to cause motion, is an Action: That an Action cannot be continued but by the Agent, who began it.

b. The *Conclusions*; That no *Body* hath Motion of it self: That the First Mover of *Bodies* is not a *Body*: That it cannot be but a *Spirit*, that is the First Mover: That it cannot be but the same *Spirit*, who has begun to move *Bodies*, that continues to move.

In the *Fifth*, He treats of the Union of the *Body* and *Soul*, and the manner, how they act one upon the other; and esteems it not more difficult to conceive the Action of *Spirits* upon *Bodies*, and of *Bodies* upon *Spirits*, than to conceive the Action of *Bodies* upon *Bodies*: the cause of the great difficulty in understanding the two former, arising (according to him) from thence, that we will conceive the one by the other, not considering, that every thing acting according to its own nature, we shall never know the action of one Agent, if we will examine it by the notions we have of another, that is of a quite differing nature. Here he notes, that the Action of *Bodies* upon *Bodies* is not more

more known to us ; than that of Spirits upon Bodies , or of Bodies upon Spirits ; and yet most men admire nothing but *this* , believing to know the *other* : whereas he Judges , that all things being well examin'd , the Action of Bodies upon Bodies is no more conceivable , than that of Spirits upon Bodies . Mean while the opinion of the Authour touching this subject , is , That the union of Soul and Body consists onely in this , that certain motions of the Body are followed by certain *Consi-
tations* of the Soul , and , on the contrary , that certain Thoughts of the Soul are follow'd by certain *Motions* of the Body . And , hav-
ing supposed , that Bodies are said to act upon one another , when they cause some change suitable to Extension , and Spirits to act upon one another , when they cause some change suitable to a Thought ; he in-
fers , that when a Body acts upon a Spirit , that cannot be by causing any change of motion , of figure , or parts , as having none of all these ; nor when a Spirit acts upon a Body , that cannot be by produ-
cing any change of Thought , as having none : But , when this Body , or its motion , or figure , or other thing , depending upon its nature , can be perceived by a Spirit , so as , upon that occasion , this Spirit has thoughts , it had not before , it may be said , that the Body has acted upon this Spirit , for as much as it has caused all the change in it , whereof it was capable according to its nature .

In the *Sixth* , After he hath shew'd , what is to be understood by what we call *Soul* , and by what we call *Body* , he labours to make it out , that we are much more assured of the Existence of the Soul , than of that of the Body , which he conceives he can prove from hence , that we cannot doubt , that we think , because even doubting is thinking ; but one may doubt , whether one has a body , for several reasons , which he alledges , and thinks so cogent , that he concludes , it is not evident to him by the light of reason , that he has a Body . But sup-
posing , there be Bodies , he examines , what are the Operations , that belong to the Soul , and what those , that belong to the Body ; and lastly , what those , that result from the Union of both : And then explains , how all those operations are perform'd , and particularly , *Sensation* ; where he shews , that the Nerves , holding at one end to the Brain , whereof they are but Allongations , and being at the other end ex-
tended to the extremities of the Body ; when an Object comes to touch those exterior ends of the Nerves , the interior ones in the Brain are presently shaken , and cause different sensations according to the diversitie of Nerves , and the differing manner , in which they are shaken . And to shew , that 'tis this shaking , that causes Sensa-
tion , he notes , that if any thing shakes the interior parts of the Nerves , though the object be absent , the Soul has presently the same sen-
sations

sations, as it would have, if it were present. As, if one should knock on's head forcibly against a wall, the shaking, which the blow gives to the Brain, moving the interior extremities of the Nerve, which causes the sensation of Light, the Soul has the same sensation, which it would have, if it saw a thousand Candles: On the contrary, if the interior extremities of the nerves are not shaken, though the object be present, it causes no sensation; whence it comes, that if a strong Ligature be made upon the middle of the Arm, and the hand be then prickt, no pain is felt, because the shaking of the nerves that are prickt, being stopp'd by the Ligature, cannot reach to the extremities of the Nerves, that are within the Brain.

Advertisement.

The following *Errata*, left by the *Press* in *Nam. 16*, the *Reader* is desired thus to correct.

Page 169. lin 27. read, *motion of B. above the Center*; *G.* is also, with a *Semi-colon* after the word *Center*. p. 274. l. 13. r. *it to do to the*. p. 277. l. 24. r. *natural dayes*. p. 281. l. 16. r. *of his*. ib l. 27. r. *a notion*. p. 293. l. 4. r. *enough without*. ib. l. 43. r. *to the Sine of*. p. 294. l. 1. r. *to the Sine of*.

L O N D O N,
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